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(71) Applicant: NEC CORP

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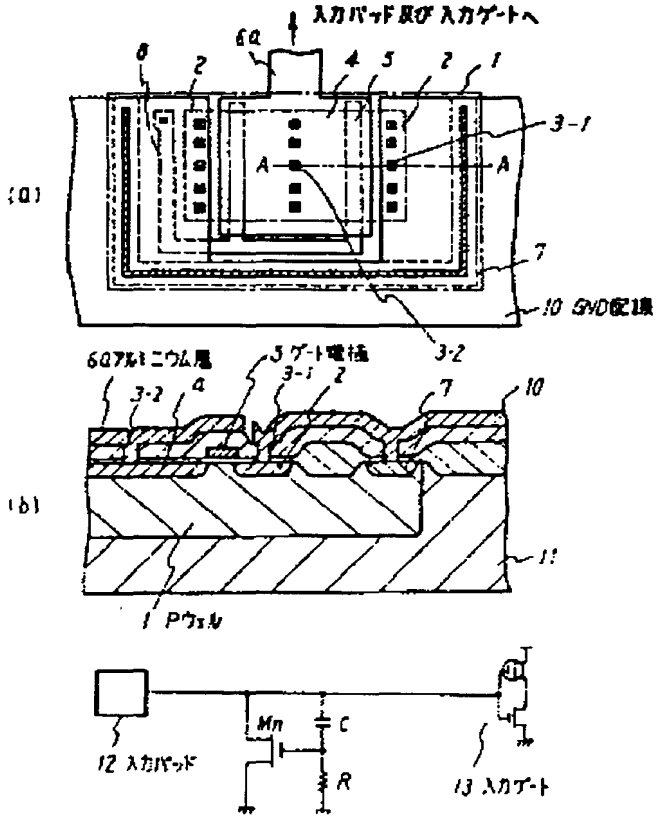
(54) INPUT PROTECTOR FOR SEMICONDUCTOR INTEGRATED CIRCUIT

(57) Abstract:

PURPOSE: To relieve concentration of electric field at the P-N junction of drain and to improve electrostatic breakdown strength by covering a gate electrode, inserted between an input pad and the input gate of inner circuit, with a conductive layer connected with the input pad thereby raising the potential at the gate electrode, upon application of positive voltage onto the input terminal, and conducting an nMOS transistor.

CONSTITUTION: A gate electrode 5 is connected through a polysilicon resistor 8 with GND wiring 10, and the N+ diffusion layer 4 in drain region is connected through a contact hole 3-2 with an aluminum film 6a. The aluminum film 6a is connected with an input pad and an input gate and applied onto the gate electrode 5 of an nMOS transistor, thus providing a coupling capacitance C between the aluminum film 6a and the gate electrode. Upon application of positive voltage higher than the breakdown voltage onto the input, potential at the gate rises through the coupling capacitance C between the aluminum film 6a and the gate polysilicon 5, and the nMOS transistor Mn is turned ON for a time interval determined by the product of the coupling capacitance C and the resistance R between the gate and the GND. Concentration of electric field at the P-N junction of drain is relieved through the



channel, resultingin in the improvement of electrostatic breakdown strength.